WHAT IS CLAIMED IS:

1. A flow control system, comprising:

a first fluid flowing at a first fluid flow rate;

a flow control valve through which a second fluid flows, the flow control valve having a coil and a spool, such that an electric current flowing through the coil generates an electromagnetic force on the spool;

a sensor operable to sense a parameter of the second fluid;

a control system coupled to the sensor and the coil, the control system operable to determine a desired flow rate of the second fluid based on the first fluid flow rate, the control system further operable to adjust the electromagnetic force on the spool based on the sensed parameter to achieve the desired flow rate.

2. The flow control system of Claim 1, wherein the control system remembers a setting of the electric current, and wherein the control system applies the remembered setting or holds the remembered setting for some time.

3. The flow control system of Claim 2, wherein the remembered setting is a last setting used during a previous demand for the second fluid.

4. The flow control system of Claim 1, wherein the first fluid is water, and the second fluid is a beverage syrup.

5. The flow control system of Claim 4, wherein the water is carbonated water.

6. The flow control system of Claim 1, wherein the first fluid is a beverage syrup, and the second fluid is water.

7. The flow control system of Claim 6, wherein the water is carbonated water.

8. The flow control system of Claim 1, and further comprising a shut-off valve, the shut-off valve operable to stop flow of the second fluid.

9. The flow control system of Claim 8, wherein the sensor is located between the flow control valve and the shut-off valve.

10. The flow control system of Claim 8, wherein the flow control valve, the shut-off valve, and the sensor are integrated.

11. The flow control system of Claim 1, wherein the sensor is a single thermistor.

12. The flow control system of Claim 1, wherein the control system controls a pulse width modulated signal to adjust the electromagnetic force on the spool.

13. The flow control system of Claim 1, wherein the sensed parameter is flow rate.

14. The flow control system of Claim 1, wherein the sensed parameter is temperature.

15. A beverage dispensing system, comprising:

a plurality of flow control valves, each of the flow control valves having a coil and a spool such that an electric current flowing through a respective coil generates an electromagnetic force on a respective spool;

a plurality of sensors, each sensor operable to measure a parameter of a fluid flowing through the respective flow control valve;

a control system coupled to the sensors and coils, the control system operable to determine desired flow rates through the flow control valves, the control system further operable to adjust the electromagnetic force on a respective spool based on the sensed parameter through the respective flow control valve to achieve the desired flow rate through that flow control valve.

16. The system of Claim 15, wherein the sensors and coils are coupled directly to the control system.

17. The system of Claim 15, wherein the flow control valves are coupled to each other.

18. A method of operating a flow control system, comprising:

determining a fluid flow rate of a first fluid;

determining a desired flow rate for a second fluid based on the fluid flow rate of the first fluid;

sensing a parameter of the second fluid; and

setting a flow rate of the second fluid based on the sensed parameter of the second fluid to achieve the desired flow rate, wherein setting the flow rate comprises adjusting a position of a spool by adjusting an electromagnetic force on the spool.

19. The method of Claim 18, wherein adjusting the electromagnetic force comprises adjusting a pulse width modulated signal sent through a coil.

20. The method of Claim 18, and further comprising dithering the spool.

21. The method of Claim 18, and further comprising remembering a control setting, and wherein at least part of setting the flow rate comprises applying the remembered control setting or holding the remembered control setting for some time.

22. The method of Claim 21, wherein the remembered control setting is a last control setting used during a previous demand for the second fluid.

23. The method of Claim 18, wherein the sensed parameter is flow rate.

24. The method of Claim 18, wherein the sensed parameter is temperature.

25. The method of Claim 24, and further comprising measuring a flow rate of the second fluid, and wherein setting the flow rate of the second fluid is based on the sensed temperature and the measured flow rate.

26. The method of Claim 18, wherein determining the fluid flow rate of the first fluid comprises assuming the fluid flow rate of the first fluid.